[0048] Returning to FIG. **3**, once a user recipe is generated, the user recipe is used in Step **312** as an input to one or more cognitive video games played by the user. More specifically, the normalized output of the user's test performance is used to compare the user's competence within the video game activities. Video game activities include maneuvers and actions which embed cognitive training exercising the same five cognitive domains that were tested by the psychometric tests applied in Step **306**. For example, a video game may require remembering, identifying, and catching monsters while navigating through a treacherous environmental setting, or selectively taking the photograph of fish in specific underwater settings. Over time, data is collected such that it becomes possible to observe/see which aspects of gameplay apply specifically to the test performance data of the user. A user's trajectory can be plotted/mapped to determine where a user falls within the collected data. The video game activities are linked to the cognitive training application and the test results, which are fed into the game via a processor. Activity performance data for the user may be obtained during the second training round and may form the basis for a new training recipe, a new training report, and a new training round, ad infinitum.

[0049] In Step **314**, the raw activity performance data for the user is obtained from the video game activities played in ST **312**. At this stage, in Step **316**, activity weights are obtained to apply to the video game activity performance data. The activity weights may be the same as or different from the weights applied to each cognitive domain by the experts for the test activity. In one or more embodiments of the invention, any suitable fit algorithm may be applied to the weights of the psychological testing to determine the weights of the video game activities. For example, a best fit or a least squares fit algorithm may be applied to determine how the weights of the psychological tests are applied to the video gaming activities. In Step **318**, a game recipe is generated for the user, based on the video game activity weights and the cognitive health score obtained from the psychological tests administered to the user. This game recipe recipe may be used to generate a training report including activity results for the user.

[0050] Those of ordinary skill in the art would appreciate that the game recipe generated in Step **318** may be generated much in the same manner described in FIG. **4**. That is, game activity distributions are obtained in advanced, and user's performance in each game activity is compared to the performance of user's peers to determine where in the spectrum the user's game score lies, including measuring the latency (speed) and the error percentage (accuracy) in each game activity. There may also be game baselines stored in the repository from data collected over time for the general population's performance in the video game activities. The user's game activity scores may be normalized as well, and a weighted average may be computed for each of the plurality of cognitive domains. In one or more embodiments of the invention, the user's game score is correlated with the psychological test scores using the various weights. The weights applied to the game activities may also be assessed periodically and adjusted based on user game activity performance data.

[0051] In Step **320**, a determination is made as to whether the game activity recipe is validated. The process of validation occurs by correlating game scores with the assessment scores from the psychological (psychometric) testing. Over time, when sufficient data is collected in the gaming activities and mapped to the various tasks in the psychological (psychometric) testing, the game results themselves are sufficient to give an assessment of a user's cognition health, and the administration of the psychological tests can be limited to occasional recalibration. Rather, the user-specific game recipes may be used as inputs the cognitive video games, as in Step **322**. Said another way, specifically, over time, sufficient data may be obtained so as adjust game scores of a user to assess whether a user's cognition is improving.

[0052] The collected data is then used to update the distributions and adjust the weights applied, if necessary to keep the data as within the limits of a general population that was administered the same tests. The recipe is updated iteratively as the user performs in the gaming activities, i.e., the video games are a proxy for cognitive functioning. In other words, the processes described in FIGS. **3** and **4** are iterative, and are repeated for each user and for each cognitive domain. Further, as more data points are obtained, the outputs of the psychological (psychometric) testing can be compared to the user's competence in the gaming activities. Computerized testing coupled with expert weightings are used to link gameplay to the test performance data, such that an in-game score correlates to a user's cognitive health. In FIG. **3** Step **320**, if the game activity recipe is not validated, the process returns to collect more data for the user based on administration of psychological tests in Step **306**, and refinement of the recipe for the user continues.

[0053] Those of ordinary skill in the art would appreciate that reverse engineering gameplay may apply to estimate cognition based on psychometric training.

[0054] In one or more embodiments of the invention, generating a recipe as described in FIG. **4** provides a clear manner to communicate the measurements of the user's performance on various tests and activities to a user. Further, embodiments of the invention make it easy to understand the training effect by comparing a recipe to a previously generated one to determine areas of improvement and/or areas of decline. Comparing between outputs from different sources, such as the outputs from the psychological (psychometric) test and the outputs from the gaming activities allows efficient updating of the recipe to obtain a robust calculation of performance and determine where a normal user's scores should lie.

[0055] In one or more embodiments of the invention, the methods described in FIGS. **3** and **4** facilitate the assessment and distribution of targeted stimulation to users that is embedded in specifically designed video games. Some of these users may be less than a mental health age of 8 years. To date, cognitive assessment using psychometric tests has been limited to ages 8 years and above. Thus this invention uniquely allows the specific assessment below 8 years and thus the selected targeting of cognition training in this age group. The targeting is made possible by the processing software that uses the unique recipe algorithm to normalize the measurement of cognition and link it with the video games to stimulate the brain where there is a deficit or weakness of cognition. Further, in one or more embodiments of the invention, as the number of users grow and as the data collected is increased, experts may decide that the weighting assigned to the various cognitive domains should be adjusted.

[0056] While the invention has been described with respect to a limited number of embodiments, those skilled in the art, having benefit of this disclosure, will appreciate that other embodiments can be devised which do not depart from the